

CLAIMS

1. A non-aqueous electrolyte secondary battery comprising: a positive electrode capable of absorbing and desorbing lithium ion; a negative electrode capable of absorbing and desorbing lithium ion; and a non-aqueous electrolyte containing a lithium salt,

said negative electrode comprising: an alloy particle containing at least two selected from the group consisting of metal elements and semimetal elements; and one selected from the group consisting of oxygen and nitrogen,

wherein said alloy particle has a phase A capable of electrochemically absorbing and desorbing lithium ion and a phase B which is incapable of electrochemically absorbing and desorbing lithium ion and has lithium ion conductivity or lithium ion permeability and

wherein the total of an oxygen content W_{ao} and a nitrogen content W_{an} is less than 0.5 wt% in said phase A and the total of an oxygen content W_{bo} and a nitrogen content W_{bn} is not less than 1.0 wt% in said phase B.

2. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein said phase A contains at least one selected from the group consisting of Sn, Si, Al, Ga, In, Pb, Sb and Bi and wherein said phase B contains at least one selected from the group consisting of Ti, Zr and rare earth elements.

3. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein said phase A is surrounded by said phase B.

4. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein said oxygen content Wao and said nitrogen content Wan in said phase A and said oxygen content Wbo and said nitrogen content Wbn in said phase B satisfy $\{(Wbo+Wbn)/(Wao+Wan)\} > 4$.

5. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein an oxygen content Wo and a nitrogen content Wn in said alloy particle satisfy $0 < Wo < 10 \text{ wt\%}$, $0 < Wn < 10 \text{ wt\%}$ and $0.5 \text{ wt\%} \leq Wo + Wn \leq 10 \text{ wt\%}$.

6. The non-aqueous electrolyte secondary battery in accordance with claim 1, wherein said alloy particle further contains at least one selected from the group consisting of fluorine, sulfur and phosphorous and wherein the total of said oxygen content Wo, said nitrogen content Wn, and a content Wf of at least one selected from the group consisting of fluorine, sulfur and phosphorous, is 0.5 to 10 wt% in said alloy particle.